DEPARTMENT OF THE ARMY
UNITED STATES ARMY MATERIEL COMMAND
FIELD ASSISTANCE IN SCIENCE AND TECHNOLOGY ACTIVITY
5985 WILSON ROAD, STE 100
FORT BELVOIR, VIRGINIA 22060-5829

REPLY TO
ATTENTION OF

AMC-FAST

20 May 1997

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Advanced Concepts and Technology II (ACT II) Program

1. The Army of the future faces the challenges of an uncertain political landscape against a background of rapid technology growth. The Army recognizes more than ever the imperative to retain technological superiority as it continues to restructure into a smaller Force Projection Army of the 21st Century.

2. The Army's ACT II Program, an Army Research Office (ARO) activity, is focused on maintaining our Army's technological superiority. ACT II brings together a unique team comprised of the Army's Training and Doctrine Command Battle Labs and the Army's research, development and engineering community. The Program enables the Battle Labs to rapidly access technologies and demonstrate meaningful solutions for soldiers within a one year timeframe.

3. At the request of ARO and in the interest of our readers, the U.S. Army Materiel Command-Field Assistance in Science and Technology is pleased to distribute the enclosed ARO prepared brochure. The latter highlights the achievements of the 25 winning proposals from the 1996 ACT II competition.

4. AMC -- America's Arsenal for the Brave.

Encl

JAMES F. GIBSON
Director

DISTRIBUTION:
See AMC-FAST Semi-Annual Report, October 1996-March 1997, Appendix E

"Making Technology Work for Soldiers..."

MG Roy E. Beauchamp
Deputy Chief of Staff, Research, Development, and Acquisition, AMC

In many leading technology areas, revolutions of innovation are occurring every minute of every day. What are today's most promising technology opportunities? What will be the opportunities tomorrow? If you think you might have the answers to these questions, we invite you to come forward and propose solutions to a wide and diverse variety of Army problems.

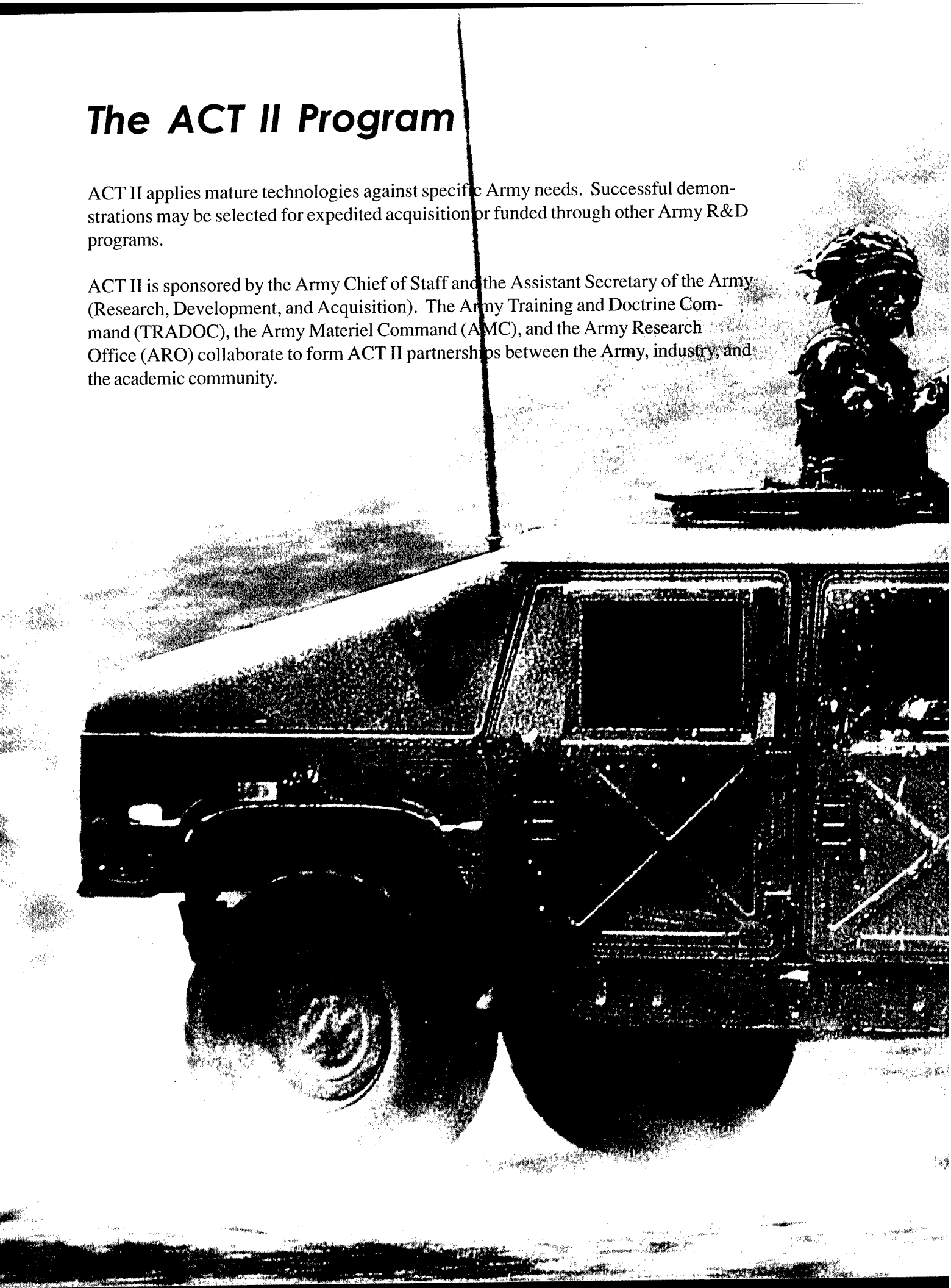
ACT II puts today's technology to work for soldiers by competitively funding industry's most advanced technologies, prototypes, and non-developmental items. Each ACT II technology demonstration is developed and selected for funding by the Army's Battle Labs (described in the pages that follow). Ultimately, the Army selects proposals that demonstrate the greatest potential to fulfill warfighting capability requirements.

In 1994 and 1995, ACT II funded a total of 63 technology demonstrations. This brochure presents the achievements of the 25 winning proposals from the 1996 competition. If you've got some good ideas you'd like to demonstrate for our soldiers - if you consider yourself a *Technology Leader* - turn the page and learn more about ACT II. We invite your future participation and look forward to seeing what you've got.

The ACT II Program

ACT II applies mature technologies against specific Army needs. Successful demonstrations may be selected for expedited acquisition or funded through other Army R&D programs.

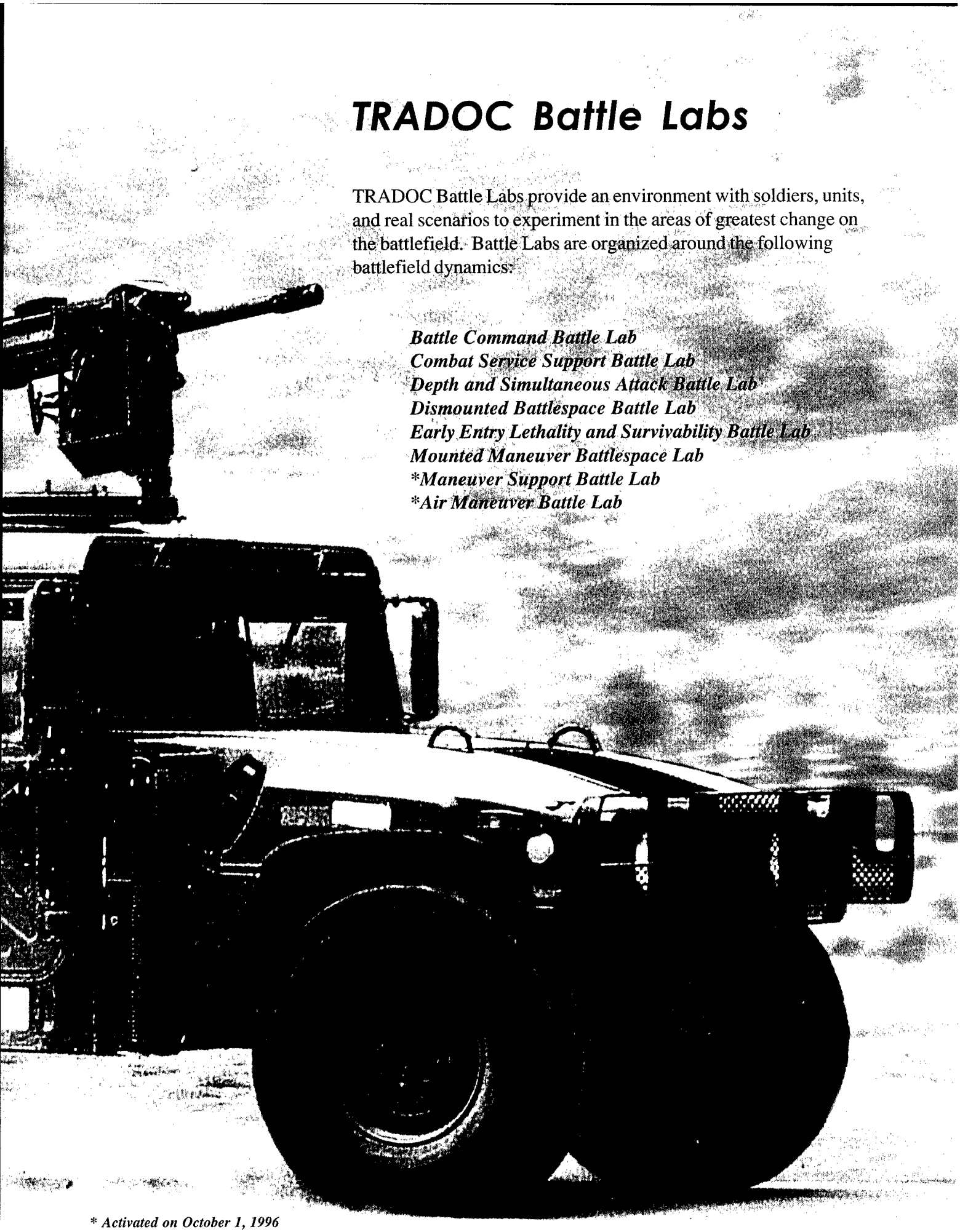
ACT II is sponsored by the Army Chief of Staff and the Assistant Secretary of the Army (Research, Development, and Acquisition). The Army Training and Doctrine Command (TRADOC), the Army Materiel Command (AMC), and the Army Research Office (ARO) collaborate to form ACT II partnerships between the Army, industry, and the academic community.



TRADOC Battle Labs

TRADOC Battle Labs provide an environment with soldiers, units, and real scenarios to experiment in the areas of greatest change on the battlefield. Battle Labs are organized around the following battlefield dynamics:

Battle Command Battle Lab
Combat Service Support Battle Lab
Depth and Simultaneous Attack Battle Lab
Dismounted Battlespace Battle Lab
Early Entry Lethality and Survivability Battle Lab
Mounted Maneuver Battlespace Lab
****Maneuver Support Battle Lab***
****Air Maneuver Battle Lab***

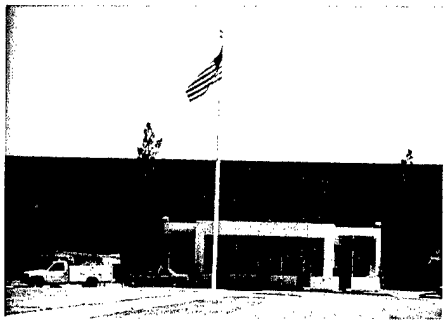


** Activated on October 1, 1996*


DIAMOND
CONCEPTS AND
TECHNOLOGY

Battle Command Battle Lab

Battle Command Battle Lab seeks to develop solutions to battle command dynamics in doctrine, training, leadership, organization, materiel, and soldier enhancements. The focus is to provide timely, relevant, and accurate information to commanders and their battle staff without tethering the commander to a fixed location on the battlefield.



Fort Leavenworth, Kansas

Fort Gordon, Georgia

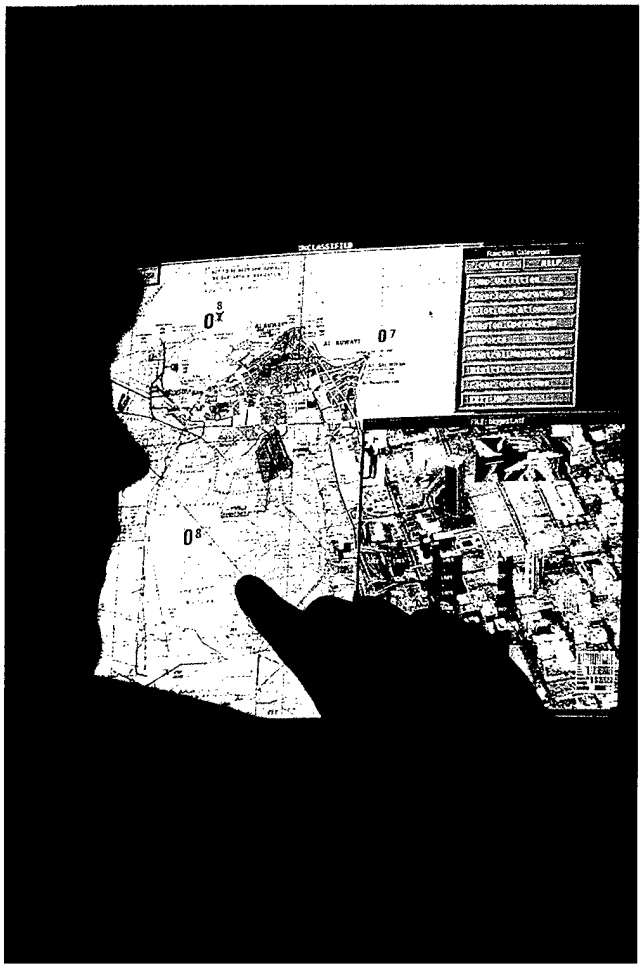
Fort Huachuca, Arizona

Multi-Media Broadcast System

The Army DirecPC (TM) Multi-Media Broadcast System provides the Army with near instantaneous encrypted transmission of detailed imagery, large text files, high fidelity video, and wireless backlinks. Through this reliable, high data rate digital satellite broadcast system, Hughes Aircraft Company provides a suite of COTS equipment with complete DirecPC capability of distribution of high-bandwidth, digital data both on and off the battlefield.

The system adapts a high data rate satellite system that prepares, either on request or scheduled, high-speed, digital information to multiple, widely distributed recipients. This system not only integrates with real-time video briefing, but also allows for Internet access with high speed download to deliver throughput intensive information, situational awareness data, and area maps. *(96BCBL-037)* ❑

Hughes Aircraft Company, Mark Levedahl, 703-875-3009
Battle Command Battle Lab, MAJ Steve Richardson, 706-791-6878
U.S. Army Communications-Electronics Command, Jay Chung, 908-427-2744



Joint Intelligence Fusion

The Joint Intelligence Fusion System (JIFS) uses Object Request Broker (ORB) technology within the Common Object Request Broker Architecture (CORBA) framework. CORBA is a standard that enables different software applications at dispersed locations to interact without prior knowledge of their network location. ORB serves as an invisible intermediary which translates between applications and transports information across the network.

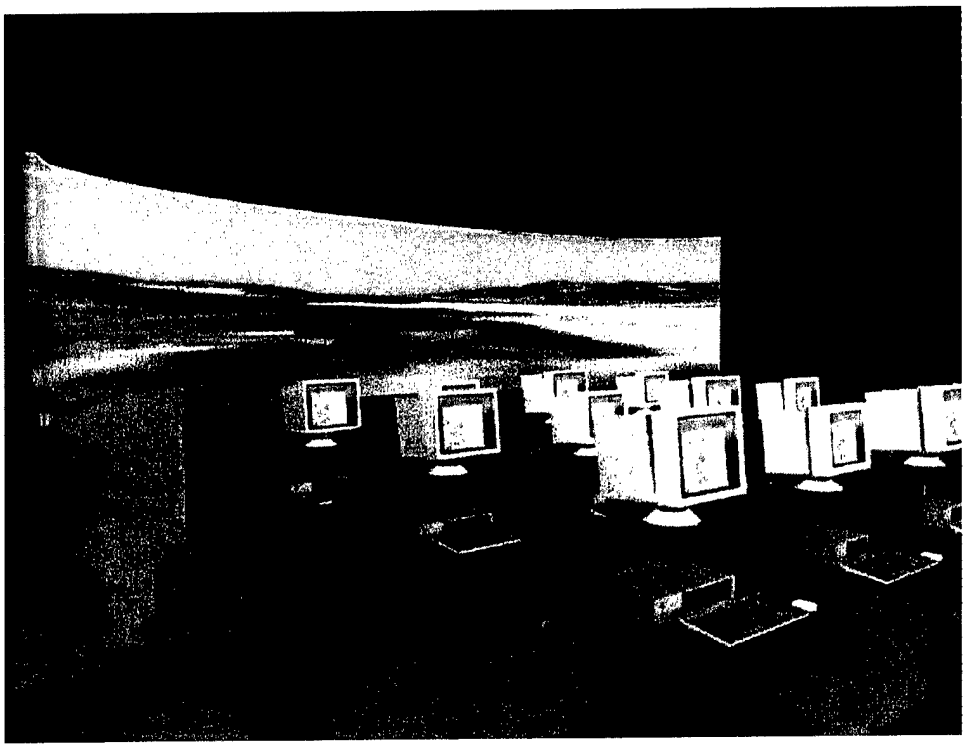
Using this software infrastructure, the project demonstrates joint database level interoperability between the Army's All Source Analysis System-Remote Workstation (ASAS-RWS), the Air Force's Combat Information System (CIS) and the Marine Corps' Intelligence Analysis System (IAS). JIFS is an extension of all of these intelligence processing platforms and is designed to be highly scaleable to not only other intelligence systems but also to any C2 system. The project's objective is to seamlessly pass situational awareness information between the service systems. *(96BCBL-068)* ❑

Mystech Associates, Inc., Gerry McIntyre, 860-445-1995
Battle Command Battle Lab, CPT Kevin Huggins, 520-533-6722
U.S. Army Communications-Electronics Command, Arlene Mohlmann, 540-349-7694

Classroom XXI Training

Classroom XXI Leader Training significantly improves Army commander and battle staff education and training at an affordable cost. It demonstrates the applications of battle command and mission planning and visualization tools necessary for tactical decision making.

This effort contributes to Warlab XXI, an advanced learning environment located at the Command and General Staff College. Warlab XXI provides better Army leader training both in the school-house and at distant locations. Removing the walls and taking the training to the individual increases the number of persons who receive training while reducing time, cost, and space required to provide training. *(96BCBL-103)* ❑



Instructor Lectern

Research Triangle Institute, Dr. Geoffrey Frank, 919-541-6629
Battle Command Battle Lab, MAJ Larry Hollingsworth, 913-684-2359
U.S. Army Simulation, Training and Instrumentation Command, Dr. James Montgomery, 407-384-3932

Combat Service Support Battle Lab

The Combat Service Support Battle Lab is responsible for the CSS battlefield function. Primary products of this battle lab are the technological and material solutions to CSS future operations capabilities (FOCs). These capabilities are validated through the effective planning and conducting of warfighting experiments. Using an integrated concept team approach, the CSS battle lab employs simulations (live, virtual, and constructive) as well as real-time targets of opportunity to experiment with new ideas and technology.

Fort Lee, Virginia

Flame Resistant Tents

Foster-Miller is demonstrating a new class of flame resistant textile fabrics that improves upon the performance of currently used fire retardant fabrics while being more economical. Since these fabrics are more efficient in resisting fire, they permit a relative overall weight reduction of the treated fabric while still maintaining high fire retardant properties.

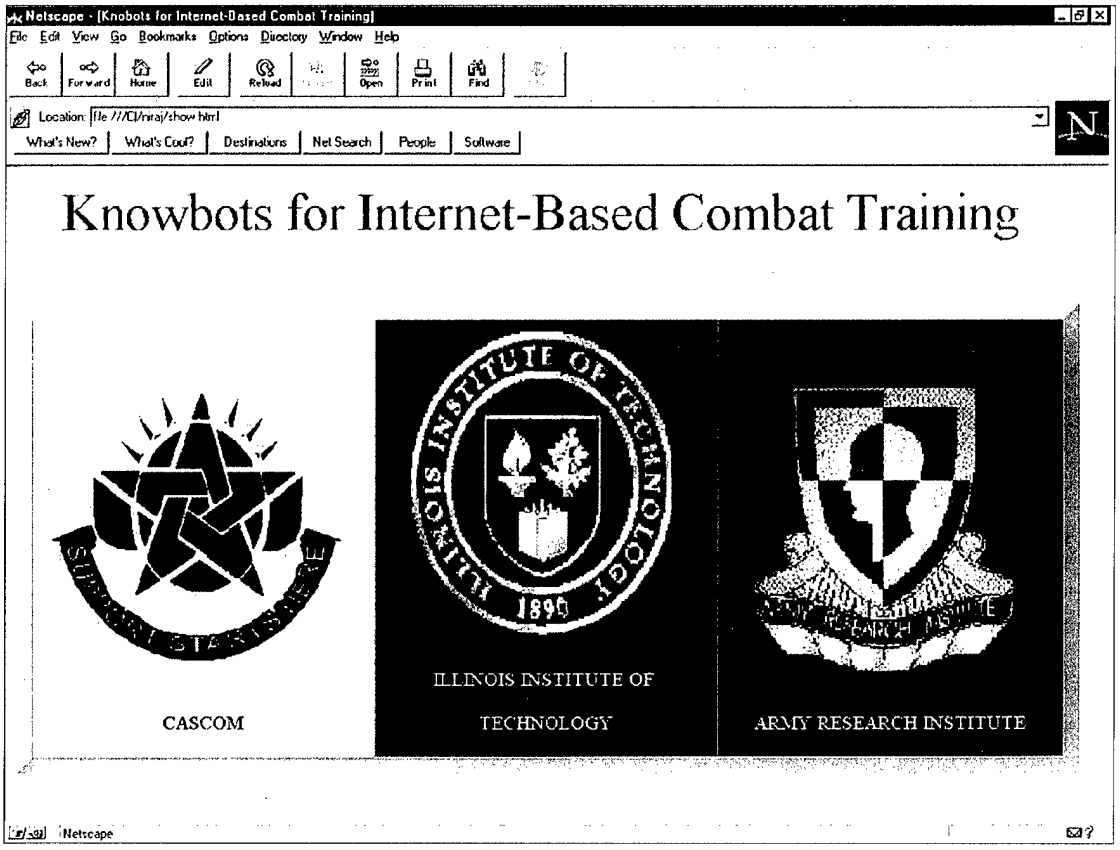
New materials processing and manufacturing techniques result in more effective, durable, and economical flame retardant textiles, as improved fire resistance for tentage increases soldier safety and prevents catastrophic results in the event of fire. *(96CSS-009)* ❑

Foster Miller, Inc., Dr. John DeMember, 617-684-4000
Combat Service Support Battle Lab, MAJ Lawrence Mariano, 804-734-0571
U.S. Army Soldier Systems Command, Jean Hampel, 508-233-4692

Internet Soldier Training

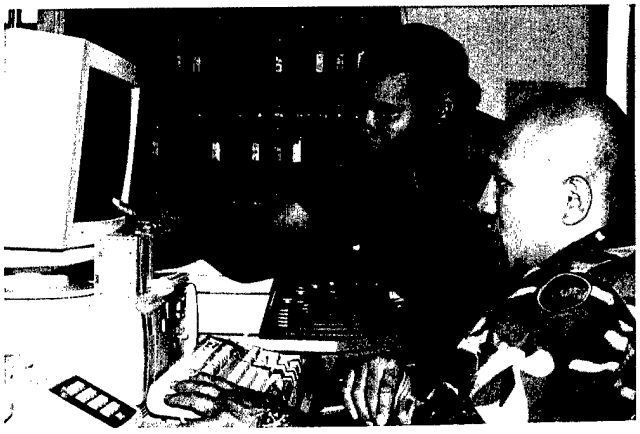
Through the use of intelligent software agents called "knowbots", the Illinois Institute of Technology automates the creation and update of individual bookmarks and indices into the World Wide Web (WWW). "Logobots" improve access to internet-based logistical information, a crucial ingredient for success in modern wars.

Using the Internet, logobots provide increased opportunities for soldiers to keep track of advances in technology by informing logobots of their requirements, and letting the logobot search through the universe of Web pages for information relevant to their topics. This process reduces information overload and increases the timeliness of information during peak stress periods. *(96CSS-016)* ❑

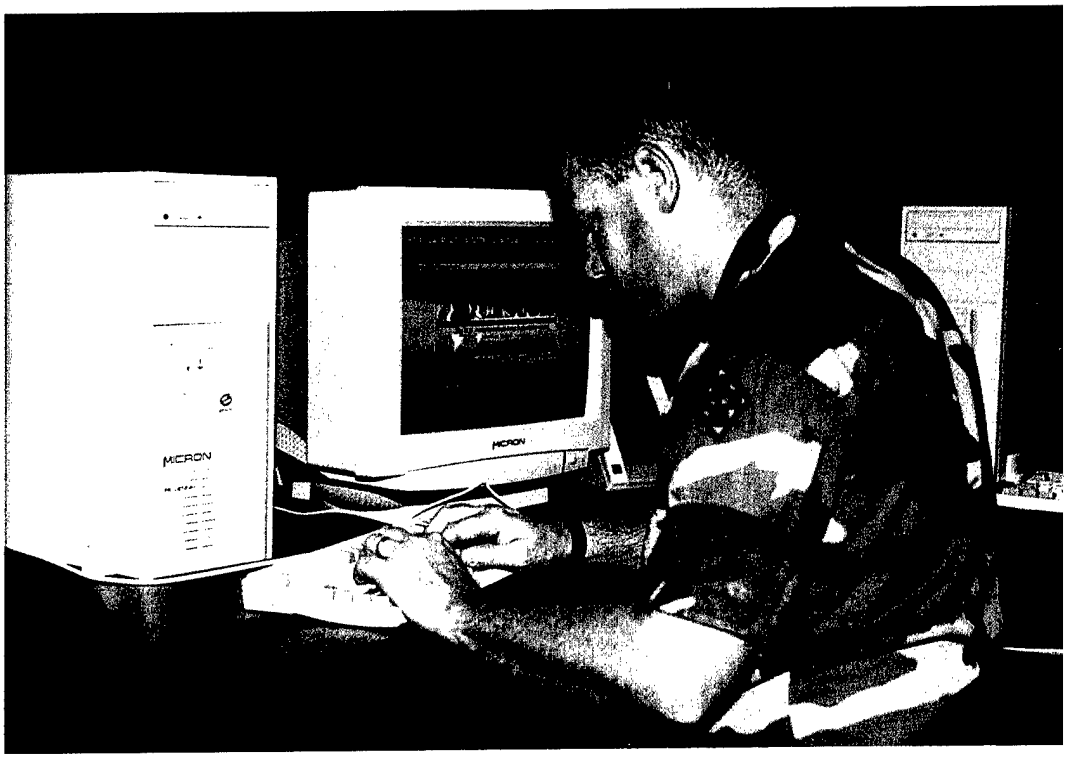


Illinois Institute of Technology, Dr. V. C. Ramesh, 312-567-3765
Combat Service Support Battle Lab, Bruce Schoch, 804-734-4605
U.S. Army Research Institute, Dr. Joe Psotka, 703-617-5572

Data Warehousing



Through the application of state-of-the-art data warehousing technology coupled with complementary store and forward communications management tools, Advanced Communication Systems, Inc. (ACS) is developing a unit level prototype of the Integrated Combat Service Support System (ICS3) management module. ICS3 is being pursued jointly by U.S. Army Combined Arms Support Command and Project Manager, Integrated Logistics Systems. This project consolidates the numerous separate and distinctly designed Standard Army Management Information Systems in a common operating environment of functionally oriented modules (maintenance, supply, transportation, medical, personnel, and financial). The management module provides efficient information handling, processing, and distribution with ready access to integrated CSS data through standardized reports and ad hoc query capabilities via a host of communications media.
(96CSS-039) ❑



Advanced Communications Systems, Inc., Hollis Morris, 703-934-8130
Combat Service Support Battle Lab, CPT Paul Mason, 804-734-0282
U.S. Army Communications-Electronics Command, Doug Wong, 908-427-3578

Electronic Casualty Cards

Electronic Casualty Cards improve training and sustainment of individual and collective medical evaluation tasks, while filling the need for a thorough and accurate method to simulate the logistics of retrieving, treating, and transporting the wounded during a battle. This technology allows medical personnel to perform an active role in attending to combat injuries by the use of recorded, time-stamped event data.

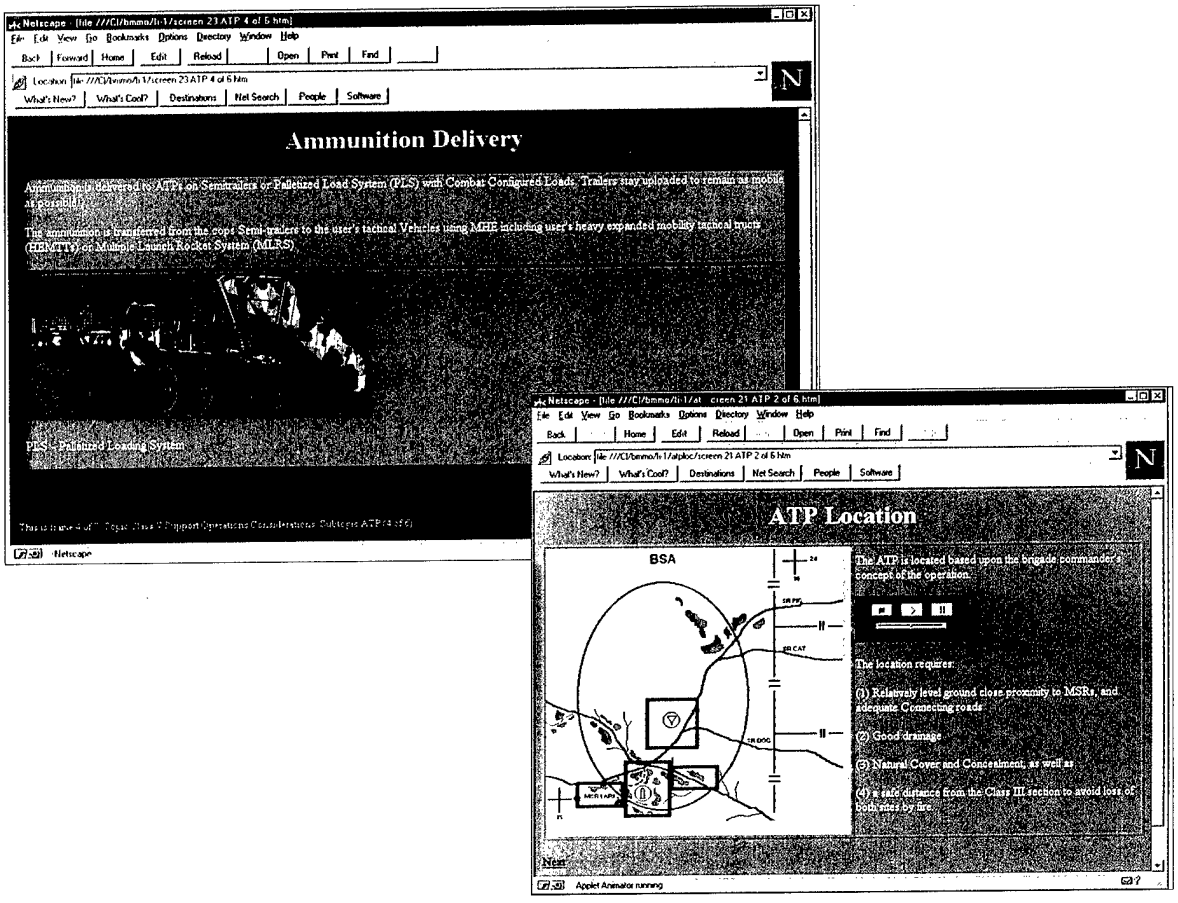
Electronic Casualty Cards provide the Army's medical personnel with the technological advancements that match those of the warfighting and logistical areas of force-on-force training by providing a realistic and spontaneous method to simulate and display injuries as they would occur during battle. *(96CSS-042)* ❑

Loral Electro-Optical Systems, Inc., Gerald Plunk, 909-624-8021
Combat Service Support Battle Lab, Tom Burnette, 804-734-2712
U.S. Army Simulation, Training and Instrumentation Command, Robert Wolfinger, 407-384-3909

Multi-Media Training On The Web

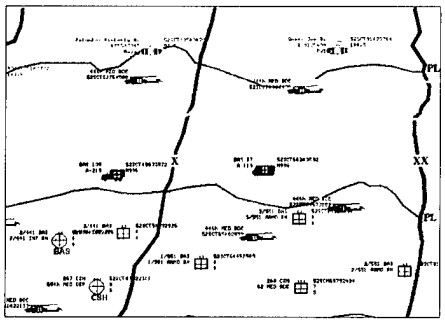
Today's smaller Army with limited budgets can no longer afford to rely solely on institutional (classroom) training; there must be a capability to present quality instruction at the soldier's home station. By combining Intelligent Tutoring Systems and the World Wide Web, Intelligent Investments prepares training and instructional materials for soldiers at their units, homes, or deployment locations throughout the world.

The tools developed under this project dramatically improve the Army's capability to quickly and efficiently process existing training materials for delivery over a network-based multimedia training server. The Training Servers also show how the materials can be tailored to suit individual soldiers' needs, and depict a capability to distribute revised materials with only a trivial amount of effort. *(96CSS-078)* ❑



Intelligent Investments, Dr. David Goldstein, 910-379-9921
Combat Service Support Battle Lab, Bruce Schoch, 804-734-4605
U.S. Army Simulation, Training and Instrumentation Command, Dr. James Montgomery, 407-384-3932

Medical Situational Awareness



The Medical Situational Awareness and Control (MSAC) workstation demonstrates the ability to track medical resources and casualties on the battlefield, as well as provide information regarding combat and non-combat casualties. MSAC uses a distributed database with digital map-based display, overlays, symbology, and other graphic capabilities.

The workstation has the capability to orchestrate the flow of casualties and direct critical medical assets to key areas on the battlefield, while providing medical and non-medical commanders and staff personnel the necessary tools for planning, operations, logisitics, and command. *(96LAM-001)* ❑

Mystech Associates, Inc., Red Natkin, 703-671-8680
Combat Service Support Battle Lab, Tom Burnette, 804-734-2712
U.S. Army Medical Research and Materiel Command, LTC Neil Fay, 301-619-7605

Joint Campaign Planning

The Joint Venture Campaign Synchronizer (JVCS) equips planners and managers with automated campaign synchronization tools in an Intranet environment. These tools identify the interdependencies and effects of changes in Army Warfighting Experiment (AWE) critical events and enabling activities.

The JVCS provides user friendly tools that Army leaders can use to maximize the effective execution and analysis of AWEs that inform Force XXI design decisions. Functional source data comes direct from initiative managers at agencies responsible for execution via a web browser interface. *(96LAM-006)* ❑

SPARTA, Inc., Rod Hallum, 757-722-9398
Combat Service Support Battle Lab, Tom Burnette, 804-734-2712
U.S. Army Missile Command, John Carter, 205-876-2889

Dismounted Battlespace Battle Lab

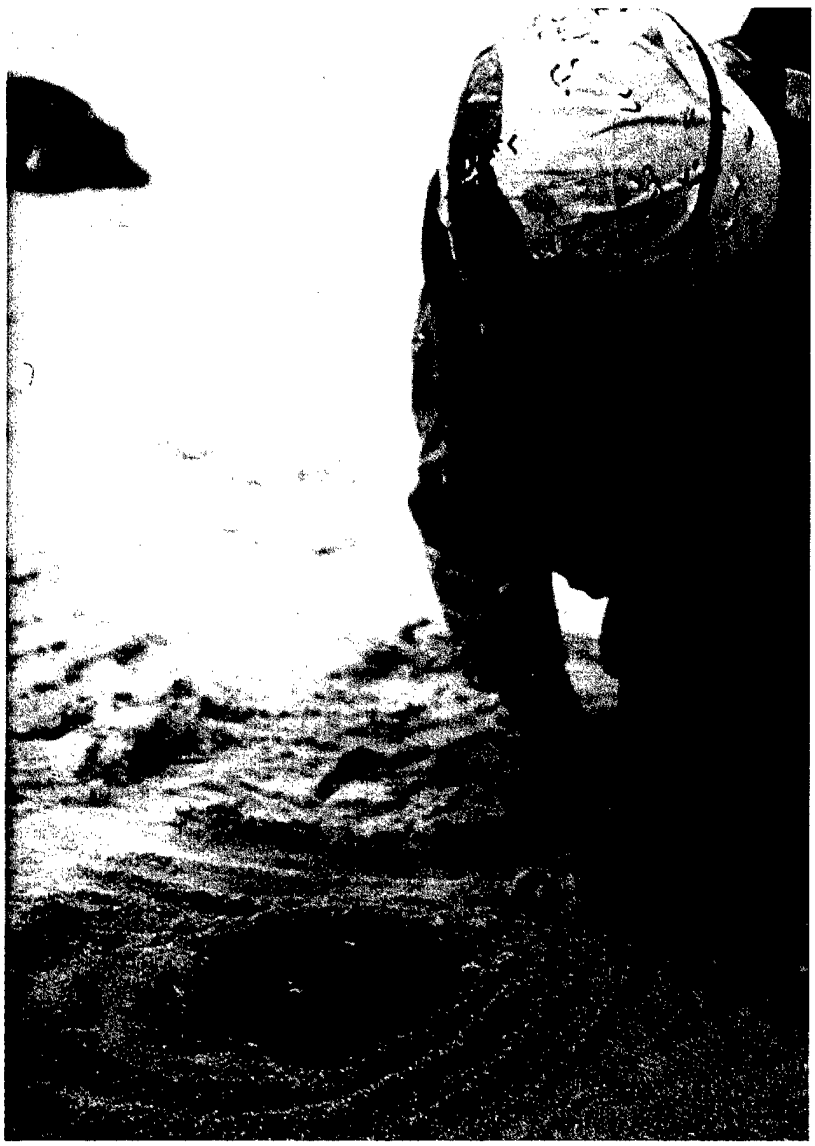
Dismounted Battlespace Battle Lab is responsible for integrating the modernization of Army forces operating in the dismounted battlespace and in Operations Other Than War (OOTW). Operations include the deployment and employment of brigade and below task forces, which are generally employed within the context of early entry operation. The generation of overmatching combat power in a dismounted battlespace is essential to defeat enemy forces during combat and to rapidly accomplish the mission required during OOTW.

Fort Benning, Georgia

Detecting Land Mines

This ACT II project demonstrates a computer simulation consisting of metallic and non-metallic mines in the minefield environment. Through a computer model of the minefield, the simulation demonstrates new detection algorithms for metal detectors and ground penetrating radars.

The computer simulation allows rapid evaluation of detection algorithms against the simulated threat, without the need for extended field deployment and expensive test equipment. Test conditions and target characteristics are programmable. *(96DBBL-047)* ❑



Quick Reaction Corporation, W. Tom Wollny, 408-622-0240
Dismounted Battlespace Battle Lab, Ron Akers, 706-545-8344
U.S. Army Communications-Electronics Command, Pam Jacobs, 703-704-1091

Portable Weather Station

The Miniature Remote Weather Station (MRWS) demonstrates the ability to measure and report meteorological data (temperature, humidity, barometric pressure, wind speed, wind direction, visibility, precipitation, river level and river flow rate) from a remote location in a fully automatic and timely fashion. This small, lightweight, man-portable weather measurement system uses microelectromagnetic sensors constructed on silicon using advanced lithography and etching techniques.

The MRWS provides accurate local weather data to support air operations during tactical maneuvers, plans for infantry and mechanized operations during engagements, and weather condition monitoring during training exercises. *(96DBBL-062)* ❑

McQ Associates, Inc., Steven Brownell, 540-373-2374
Dismounted Battlespace Battle Lab, Chris Kearns, 706-545-6391
U.S. Army Research Laboratory, Gene Barnes, 904-884-5349

Transmitting Images

This effort demonstrates a means for a dismounted soldier to send images over Combat Net Radios (CNRs) in reasonable transmission times using a small lightweight package. This system uses image compression for reduced use of communication bandwidth, and improved coding for error resiliency during image transmission in a noisy communication channel. The Modified Fast Lapped Transform is used for image compression, and Error Resilient Entropy Coding is used for error resilient image communication.

The Racal Image Compression and Transmission System (RAICATS) provides the dismounted soldier with the capability to capture and transmit imagery to higher command levels at data rates that provide for minimal physical exposure and reduced transmission times. *(96DBBL-124)* ❑

Racal Communications, Inc., Ted Neiman, 301-208-7621
Dismounted Battlespace Battle Lab, CPT Scott O'Neil, 706-545-6392
U.S. Army Communications-Electronics Command, Hai Do-Duc, 703-704-3194

Combat Laser

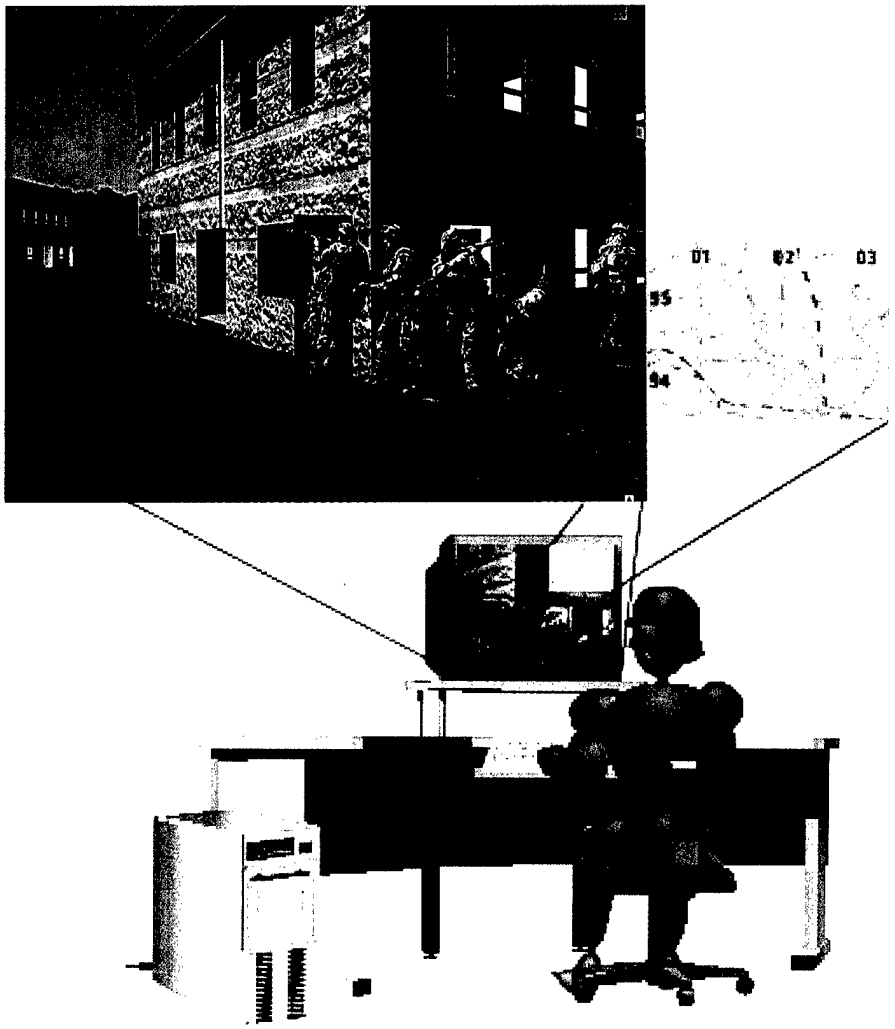
The Combat Soldier Integrated Multipurpose Laser System (CS+) is a compact, lightweight, and ruggedized laser system constructed from state-of-the-art designs plus commercially available components. It provides Identification of Friend or Foe, near-IR illumination to aid Night Vision Goggle operations, precision night firing aiming and accuracy, and a common system for training and combat. The project demonstrates the CS+ multifunctional capabilities matching within the maximum effective range of the individual soldier's weapon, crew served, and anti-armor man portable/vehicular mounted defense combinations.

By providing multifunctional laser-based capabilities, CS+ advances the U.S. Army's warfighting capabilities in the 21st century, addresses the problem of fraticide, enhances night combat operations, and enables soldiers to effectively and safely train or fight with the same system. *(96DBBL-162)* ❑

Atlantic Research Marketing Systems, Inc., Dick Swan, 508-584-7816
Dismounted Battlespace Battle Lab, Glen Kohlhase, 706-545-6211
U.S. Army Communications-Electronics Command, John Nettleton, 703-704-1704

Soldier System Simulation

Current simulation and modeling systems do not provide a metric for assessing the contribution of increased data and information to soldier situational awareness. This Intelligent Interactive Information Assessment (I^3A) system, developed by Simulation Technologies, Inc., meets the need in supporting the design, implementation, and operation of data fusion and presentation technologies. It addresses a significant gap in soldier system modeling and simulation by quantifying the effect of increased situational awareness on mission outcome. *(96DBBL-201)* ❑



Simulation Technologies, Inc., Bob McIntyre, 919-676-9554
Dismounted Battlespace Battle Lab, Gene Dutoit, 706-545-5844
U.S. Army Soldier Systems Command, John O'Keefe, 508-233-4881

Depth and Simultaneous Attack Battle Lab

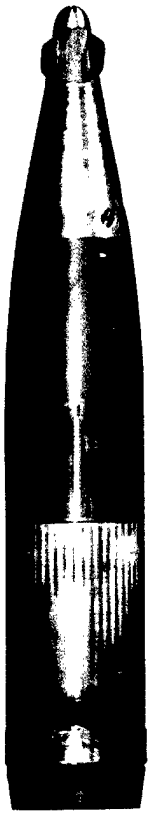
Depth and Simultaneous Attack Battle Lab is responsible for horizontally integrating all activities related to conducting simultaneous attacks in all three dimensions against an enemy throughout the depth of the battlefield. Its focus is to detect and identify enemy forces, convey the information in near real-time from sensors to engagement systems, and conduct unilateral and joint precision strikes with destructive and disruptive fire.

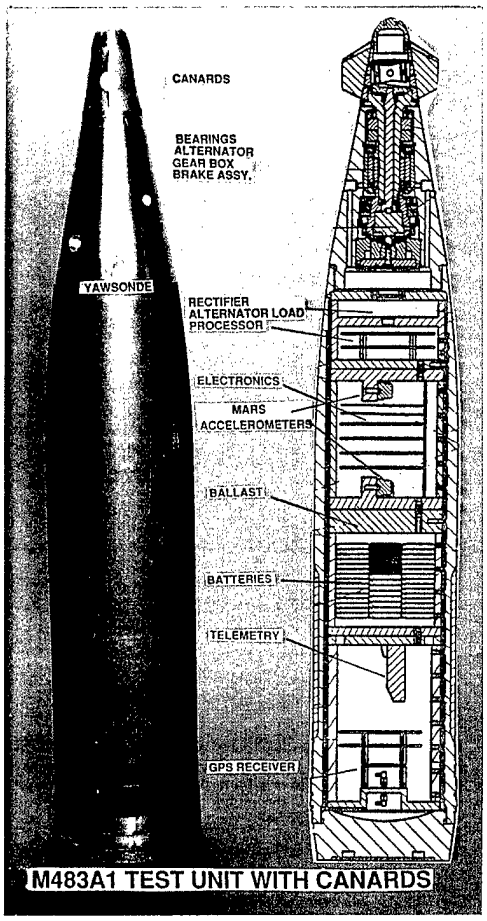
Fort Sill, Oklahoma

Smart Munitions

The Canard Control System Module (CCSM) verifies that canard controlled 155MM projectiles can be maneuvered in flight to improve the accuracy of the munitions and that GPS can be integrated into the CCSM as a further enhancement. This program reduces logistics burdens by improving the accuracy of the rounds, and is able to interface with the current class of NATO ammunition as a fuse well replacement field upgrade.

Alliant Techsystems is also providing a 7 Degree-of-Freedom simulation model that predicts the projectile's maneuverability capability. *(96DSA-040)* ❑





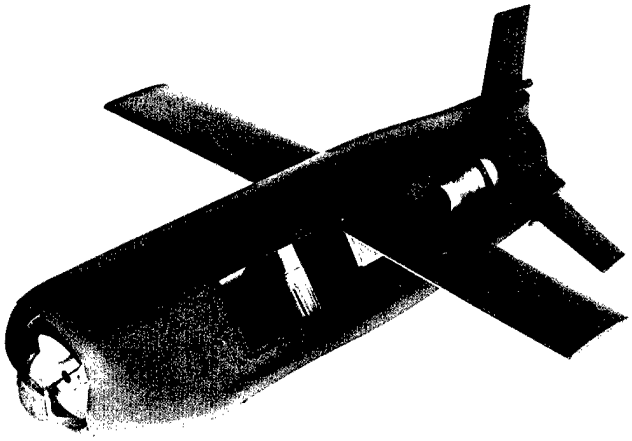
Alliant Techsystems, Gary Schlieckert, 612-931-5275
Depth and Simultaneous Attack Battle Lab, Randy Shorr, 405-442-2936
U.S. Army Tank-Automotive and Armaments Command, Vince Ilardi, 201-724-4950

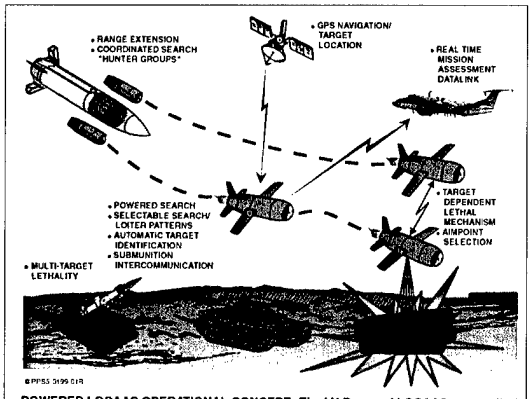
Precision Guided 2.75 inch Rocket

The Precision Guided Rocket System (PGRS) applies body-fixed, semi-active laser seeker guidance and thruster control technology to the 2.75in rocket system currently in the Army's inventory. In today's warfighting environment, new weapons must increase survivability and mission effectiveness. The PGRS will minimize collateral damage, limit fratricide, and increase stowed kills. The low-cost, high stowed kill PGRS will enhance the Army's ability to project and sustain its forces in today's economic environment. Increasing the kill probability per round will increase the number of targets that can be engaged by the same number of deployed aircraft, and reduce the amount of munitions that must be expended per mission. In certain situations, the kill per round ratio will allow fewer rounds to be carried, thereby increasing the available fuel capacity, and extending platform range.

Texas Instruments demonstrated both the warfighting and technical capabilities of the PGRS through a series of DIS-compliant user simulations, 6-DOF simulations, and Hardware-in-the-Loop simulations. Additionally, critical component tests of the seeker and thruster sections along with system-level ballistic shots demonstrated the maturity of PGRS technology.
(96DSA-046) ❑

Texas Instruments, Inc., Todd Trapp, 214-575-6808
Depth and Simultaneous Attack Battle Lab, Pat McCartney, 405-442-2937
U.S. Army Missile Command, Charles Lewis, 205-876-7663





POWERED LOCAAS OPERATIONAL CONCEPT. The LV-Powered LOCAAS meets all of the D&SA Battle Lab Operational Capability Requirements for a deep attack brilliant submunition.

Powered Submunition Flight Demonstration

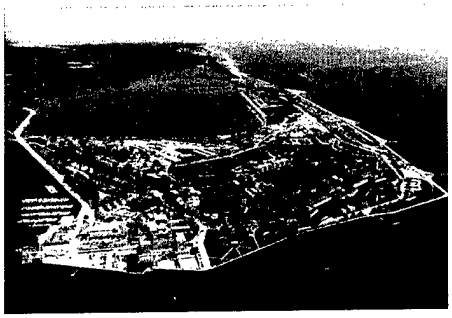
Effectiveness analyses show that high kill probabilities can be achieved with powered submunitions against a full spectrum of tactical targets. Lockheed Martin Vought Systems seeks to prove the submunition's airworthiness and navigational capability by flying a turbojet variant of the Low-Cost Autonomous Attack System (LOCAAS). Two munitions are carried to the target area by MLRS or six by ATACMS. Once dispensed from the carrier, the Submunition begins a coordinated search of the area as specified by the Fire Direction System based on target type, distribution density and terrain.

The Submunition searches for, classifies and tracks targets using a Laser Detection and Ranging (LADAR) seeker. Acquired targets are checked against an attack priority list. If the target is determined to be a priority, its particulars are transmitted via data link back to the shooter via the Tactical Operations Center. This target reporting allows for subsequent attacks and immediate attack assessment of targets encountered/engaged. *(96DSA-058)* ❑

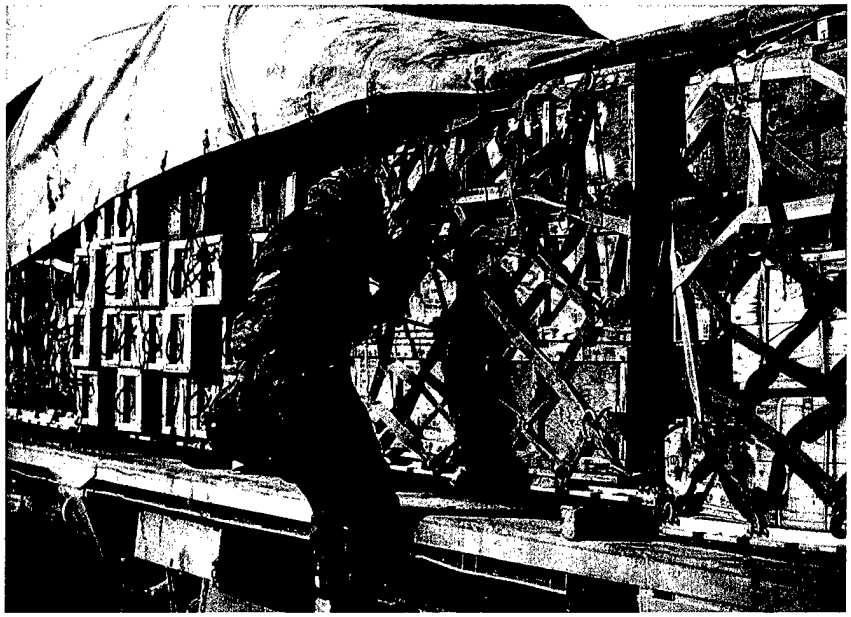
Lockheed Martin Vought Systems, Michael Tower, 972-603-1848
Depth and Simultaneous Attack Battle Lab, Randal Shorr, 405-442-2936
U.S. Army Missile Command, Meryl Hilbert, 205-876-1246

Early Entry Lethality and Survivability Battle Lab

Early Entry Lethality and Survivability Battle Lab focuses on the initial operations of deploying forces to gain foothold within a contingency theater of operations. The deployed force conducts decisive operations or sets the stage for the arrival of following forces. Early Entry operations are inherently joint, often require coalitions with friendly nations, and cover the full spectrum of conflict including OOTW.



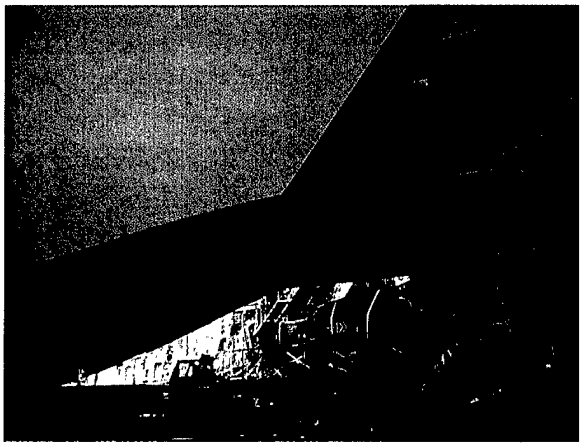
Fort Monroe, Virginia



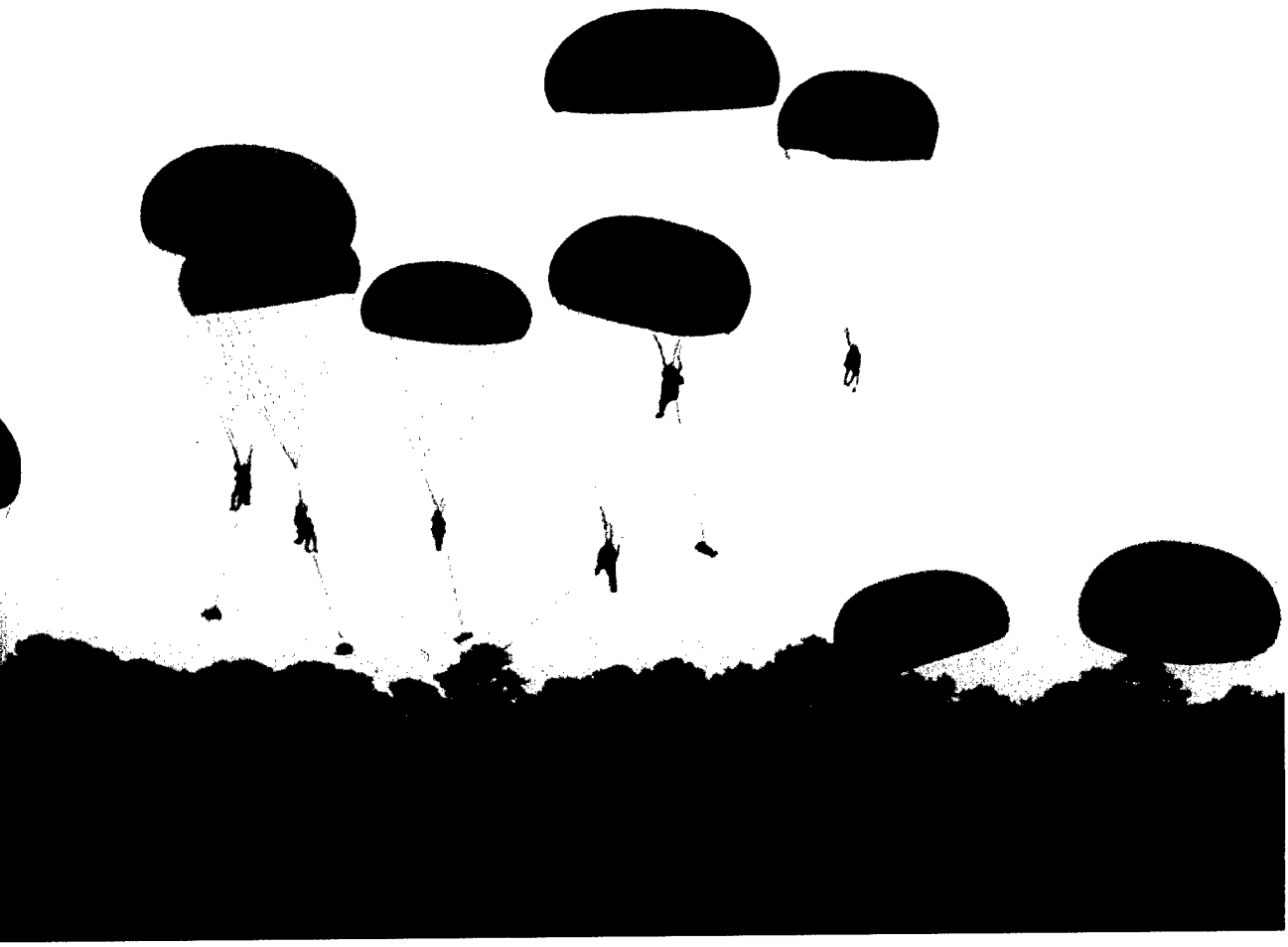
Force Projection Simulation

Computer Sciences Corporation is furthering the development of the Interactive Distributed Early Entry Analysis Simulation (IDEEAS) warfighting model to allow it to interact with the Force Projection Model. The resulting interface of models provides the capability to simulate the transportation of resources from distributed installations in the U.S. to the theater of operations and the subsequent warfight. Warfighting is simulated with only the resources available at the time the battle begins.

This combination of models provides an effective tool for exploring warfighting concepts and new technologies. It allows rapid analysis of early entry battle dynamics, including command and control, system performance, and logistics. It allows the force commander and analysts to determine the best mix of forces for various levels of available transport by trading off systems within the capacity of the available lift assets.
(96EELS-027) ❑



Computer Sciences Corporation, Mark Thomson, 757-728-5430
Early Entry Lethality and Survivability Battle Lab, LTC Scott Callender, 757-727-3911
U.S. Army Missile Command, Bob Alongi, 205-876-2961



Early Entry Tactical Deception

U.S. Early Entry forces are often faced with limited strategic lift capability and numerical superiority. Tactical Deception may provide the critical cover that these forces need to survive. This project demonstrates the ability to project a virtual force electronically onto the battlefield in the form of a planned tactical maneuver designed to be observed by enemy sensors. Virtual force deployment provides force augmentation and a method of causing the enemy to act in our best interests, without him being aware of it. *(96EELS-091)* ❑

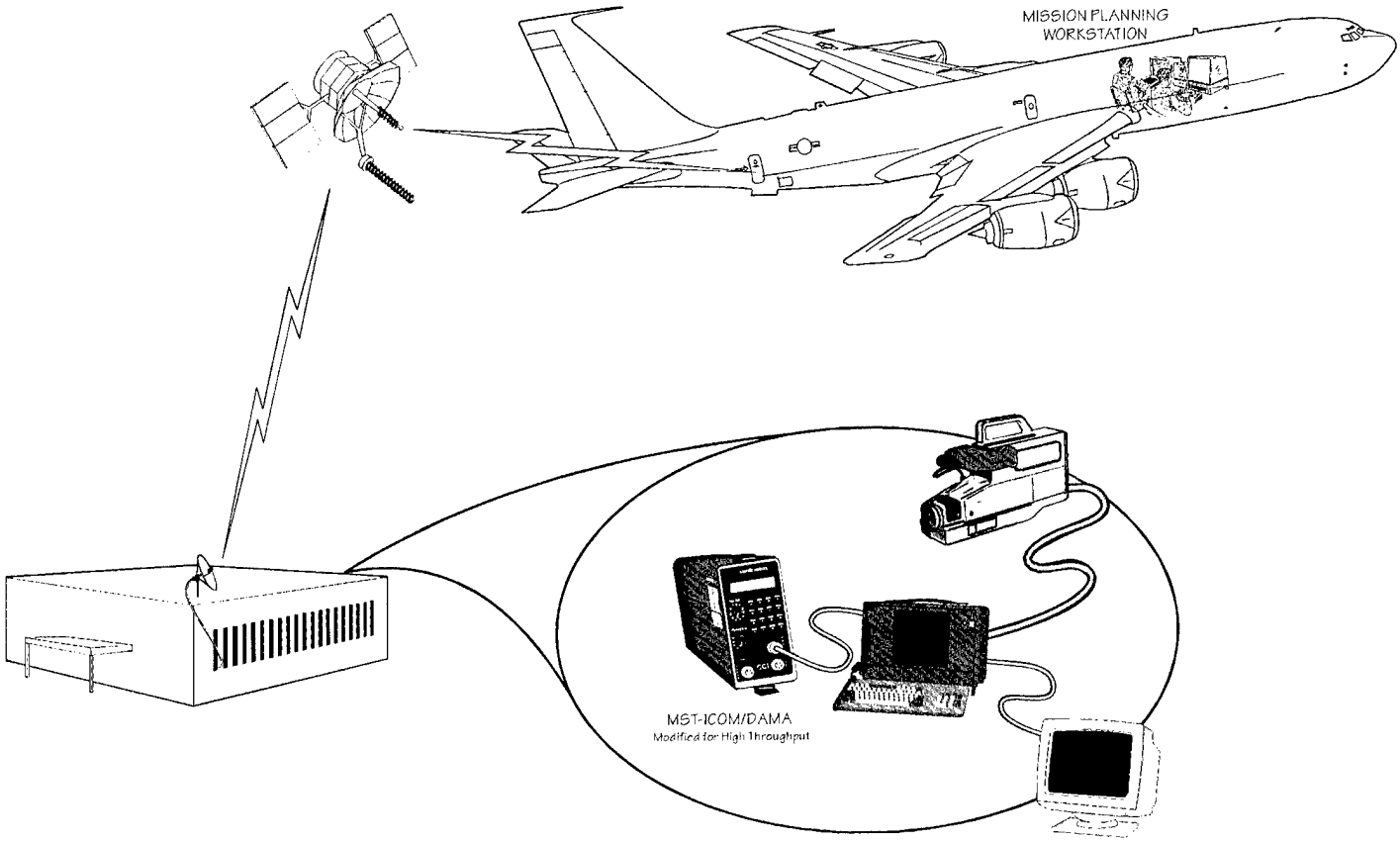
Lockheed Sanders Co., Paul Howson, 603-885-4120
Early Entry Lethality and Survivability Battle Lab, MAJ Tom Hite, 757-727-3096
U.S. Army Communications-Electronics Command, George Stanko, 908-427-5547

Armored Defense

Countermeasures! For every lethal measure designed to defeat U.S. forces, effective countermeasures must be devised. In future conflicts, U.S. forces may be employed in situations ranging from contingency operations to full scale war. The proliferation of Anti-Tank Guided Missiles (ATGMs) places armored vehicles at an unacceptable risk.

Lockheed Sanders has developed a system which protects against fielded ATGMs. This product is evolving from the Advanced Threat Infrared Countermeasure system, which was developed for protection of aircraft from IR-guided Surface to Air Missiles. The system consists of a low-cost missile sensor suite to provide attack warning and direction, integrated with a directable infrared jammer which is automatically turned on when the vehicle is under attack. This is a major improvement over currently available products, which must be left on continuously thereby increasing the IR signature of the vehicle. *(96EELS-092)* ❑

Lockheed Sanders Co., Steven Kelly, 603-885-2100
Early Entry Lethality and Survivability Battle Lab, Chris Pruitt, 757-728-5427
U.S. Army Communications-Electronics Command, Elaine Wynne, 908-427-4247



Enhanced Satellite Communications Enroute

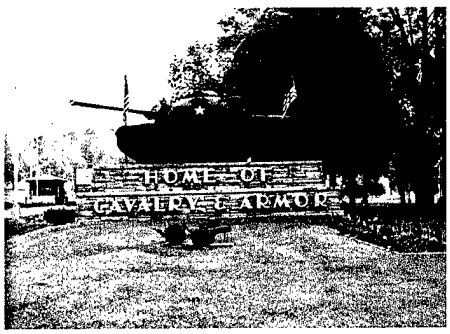
This project increases the capacity and efficiency of existing tactical UHF SATCOM channels through digital technology enhancements of existing products. The technology being developed and demonstrated provides throughput of up to 4.8 kps via existing 5KHz UHF satellite channels and shows the potential for proven technology to squeeze more information into the channel as well as novel technology for ensuring the quality of the link.

The new approach combines advanced Trellis modulation techniques with advanced error correction coding techniques to provide this robust, enhanced capability. The design is unique in its sophistication, but based on solid, proven basic elements. It allows transmission of imagery information from advance force elements back to a command post as well as a voice channel to the soldier in the field via UHF SATCOM. *(96EELS-103)* ❑

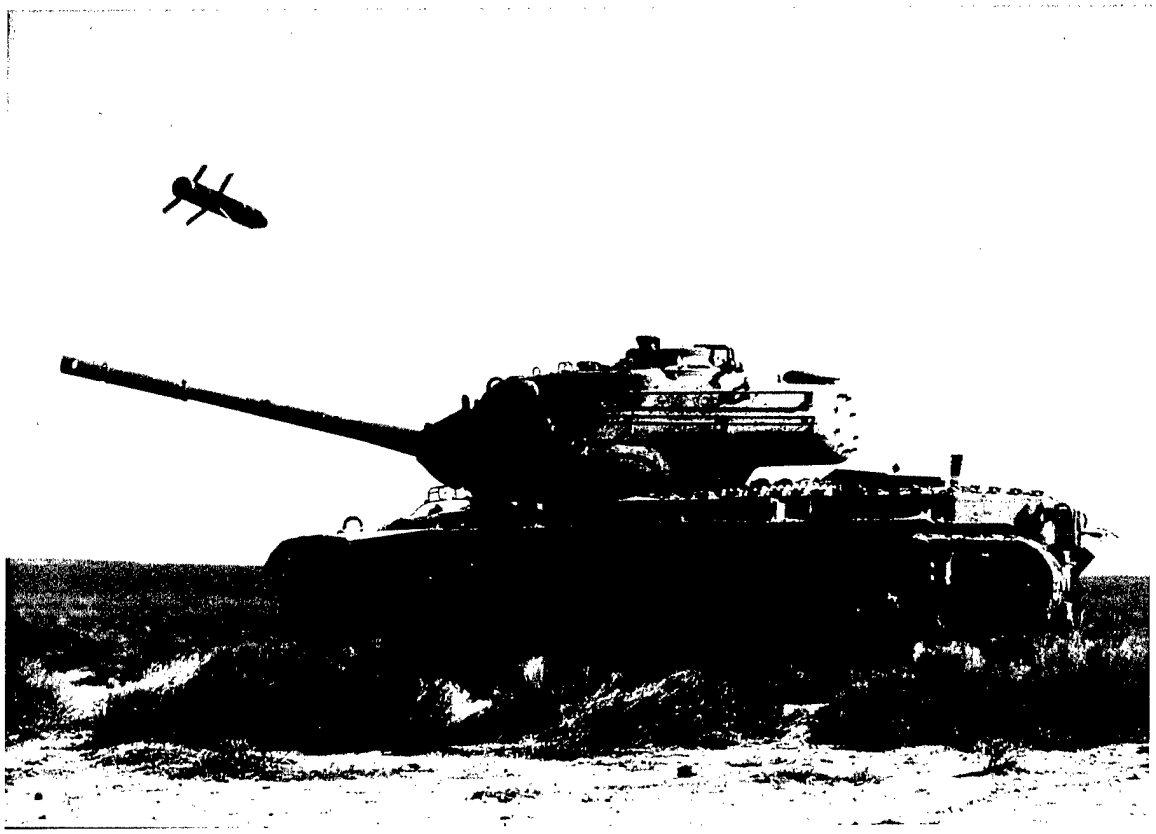
GEC-Marconi Hazeltine, Fred Eterginio, 201-633-4366
Early Entry Lethality and Survivability Battle Lab, LTC Mark Watts, 757-727-3184
U.S. Army Communications-Electronics Command, Sang Cha, 908-532-9783 ext. 5410

Mounted Maneuver Battlespace Lab

Mounted Maneuver Battlespace Lab is responsible for providing overall direction, oversight, and horizontal integration for the total Mounted Battlespace dynamic arena. This encompasses all related combat and force development efforts required for decisive maneuvers and to overmatch enemies in engagement range by optimizing situational awareness, digitized information flow, and survivability of mounted forces.



Fort Knox, Kentucky



Integrated Defense Simulation

This OptiMetrics simulation provides the Mounted Maneuver Battlespace Lab with a more effective tool to simulate Integrated Defense Systems (IDS), and their countermeasure effects on threat systems in the Distributed Interactive Simulation environment. An analyst can select from a menu of sensor and countermeasure systems, including smoke and chaff effects, and define each measure's parameters thereby allowing trade-off comparisions of system performance characteristics.

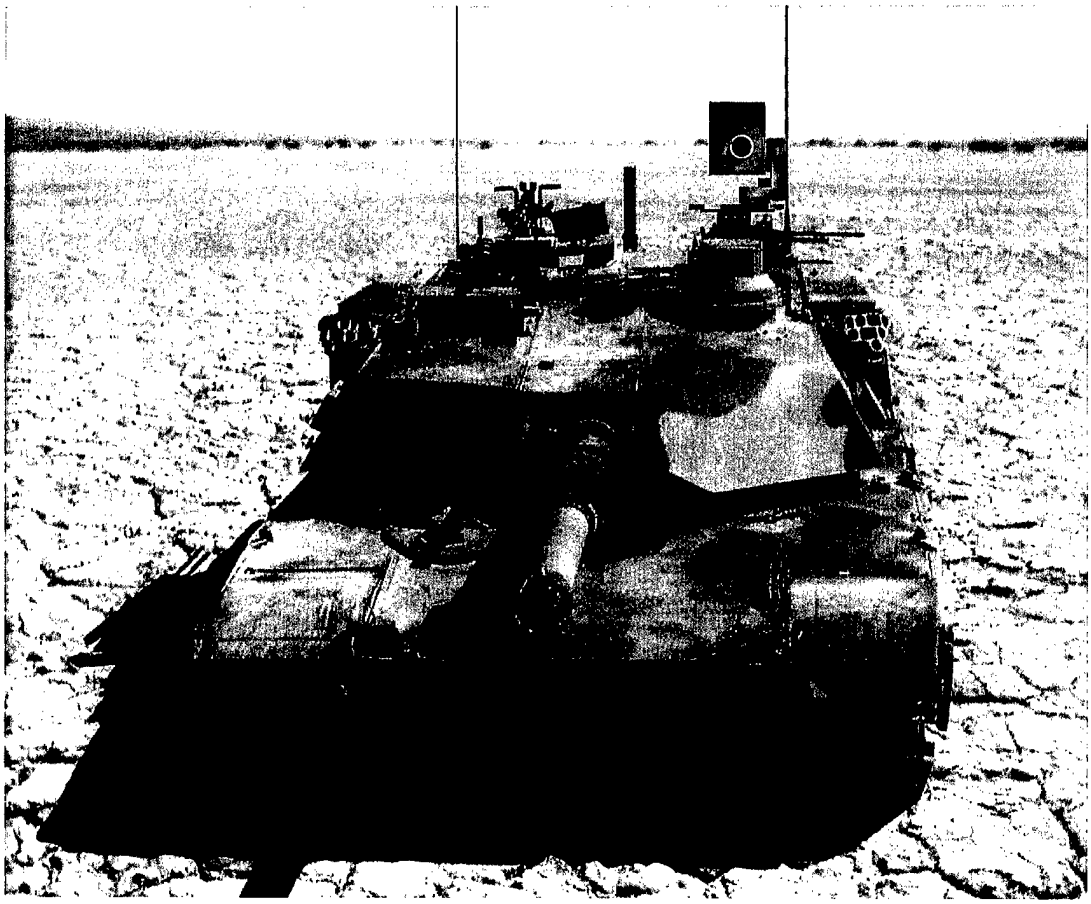
After achieving the optimal mix of simulation system effects, the IDS suite can be simulated on both manned simulators and ModSAF vehicles. Through the use of this project, the Mounted Maneuver Battlespace Lab can empirically demonstrate the value of hit avoidance technologies to the warfighter in a tactical environment. *(96MTD-024)* ❑

OptiMetrics, Inc., Fred Smith, 313-973-1177
Mounted Battlespace Battle Lab, Joe Jarboe, 502-624-8451
U.S. Army Tank-Automotive and Armaments Command, Bryan Beaudoin, 810-574-6693

Long Range Combat ID

Using Laser Radar (LADAR) technology, a prototype Combat ID system locates and identifies targets at ranges between 2500 to 5000 meters. This long range combat identification system can potentially improve a commander's situational awareness by allowing the lookers and shooters the ability to interrogate targets at greater ranges than present systems.

A LADAR unit is being installed with Automatic Target Recognition processing to a M1A2 main battle tank. This system will display the image of the target with its identification on the Commander's Independent Thermal Viewer. This image is then transmitted via SINCGARS to an All Sources Analysis System workstation located in a Battle Command Vehicle, providing tactical intelligence unavailable from other sensors. *(96MTD-039)* ❑



Loral Vought Systems Corp., Kim Jenkins, 214-603-0536
Mounted Battlespace Battle Lab, CPT Harris, 502-624-2376
U.S. Army Communications-Electronics Command, Taeho Jo, 703-704-1378

Automated Target Identification

At night or in adverse weather situations, current sensors frequently cannot provide timely, distant identification of potential targets. Syracuse Research Corporation is integrating a Moving Target Indicator/Ground Radar with a Battlefield Combat Identification System (BCIS) to provide automated target detection and "Positive Friend" identification out to 6.5 km. Targets will be detected by radar, and BCIS will automatically interrogate the target to either identify it as a Positive Friend or Unknown. The radar system will keep track of all contacts within range and new ones will be interrogated. This total system will allow vehicle crews to keep track of friendly forces, and prioritize potential threat targets. By automatically interrogating each new target and keeping track of target locations, vehicle crews can concentrate on engagements, without the possibility of enemy targets going undetected. *(96MTD-110)* ❑

Syracuse Research Corp., Jim Virgo, 315-426-3228
Mounted Battlespace Battle Lab, MAJ Burns, 502-624-1974
U.S. Army Communications-Electronics Command, Mark Weber, 908-427-4002

Highlights of 1994 and 1995

Hands-free Communications

Mounted Manuever Battlespace Lab, CECOM, Northrop Grumman Corporation

No keyboard, no mouse, no joystick. For operations literally "on-the-move", leaders at all levels can now deliver precise command and control directions without leaving the hatch or taking their eyes off the terrain.

Phoenix

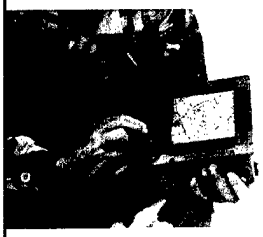
Battle Command Battle Lab, CECOM, Mystech Associates, Inc.

The Phoenix Battle Command Decision Support System is the Army's choice for bringing the Maneuver Control System onto the digital battlefield of the future.

Expert Maintenance

Combat Service Support Battle Lab, STRICOM, Research Triangle Institute

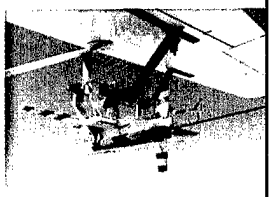
The Advanced Maintenance Assistant and Trainer System makes diagnosis simple using intelligent voice dialog and virtual reality—in fact, it even "learns" with the soldier along the way—and dramatically improves fault-isolation techniques and practices.



Soldier Command and Control

Dismounted Battlespace Battle Lab, CECOM, Litton Data Systems

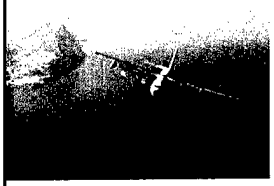
Soldier Command and Control integrated soldier system functions via a helmet-mounted display, hand terminal unit (computer) and hand-held SINCGARS radio with GPS.



Ferret

Depth and Simultaneous Attack Battle Lab, MICOM, Northrop Grumman Corporation

This ground- or air-launched missile significantly improves the commander's battlefield visualization and attack options through high-resolution, real-time data links.



Planning on the Move

Early Entry Lethality and Survivability Battle Lab, CECOM, Lockheed Sanders, Inc.

The Advanced Enroute Command and Control System provides the commander with up-to-the-moment situation awareness from diverse sources, and the capability to analyze multiple courses of action and issue operations orders literally "on the wing."

Directory

AMC
Commander
U.S. Army Materiel Command
ATTN: AMCRD-IT
Alexandria, VA 22333-0001
703-617-5764
703-617-2554 FAX
E-Mail: tconway@hqamc.army.mil

TRADOC
Commander
U.S. Army Training and Doctrine Command
ATTN: ATCD-B
Fort Monroe, VA 23651-5000
757-728-5985
757-727-3445
E-Mail: byrumj@monroe-emh6.army.mil

Army Research Office
Director
U.S. Army Research Office
ATTN: AMXRO-AAA
919-549-4301
919-549-4310 FAX
E-Mail: ann@aro.ncren.net

Air Maneuver Battle Lab
CDR, USAAVNC
ATTN: ATZQ-CDB
Fort Rucker, AL 36362-5000
205-225-2110/3485
205-225-1008 FAX
E-Mail: gary_coleman@rucker-emh4.army.mil

Battle Command Battle Lab
CDR, USACAC
ATTN: ATZL-CDB
Fort Leavenworth, KS 66027-5300
913-684-8021/23
913-684-7925 FAX
E-Mail: smithreg@leav-bcbl.army.mil

CDR, ESA (Signal Center)
ATTN: ATZH-BL
Fort Gordon, GA 30905-5299
706-791-2057
706-791-8346 FAX
E-Mail: fehrneb@bcbl.gordon.army.mil

CDR, USAIC&FH (Intel Center)
ATTN: ATZS-BL-T
Fort Huachuca, AZ 85613-6000
520-533-4661/4668
520-533-4709 FAX
E-Mail: [illegible]@huachuca-emh11.army.mil

Combat Service Support Battle Lab
CDR, USACASCOM
ATTN: ATCL-B
Fort Lee, VA 23801-6000
804-734-1682/1676
804-734-2880 FAX
E-Mail: matthew1@lee-dns1.army.mil

Dismounted Battlespace Battle Lab
COMDT, USAIS
ATTN: ATSH-WC
Fort Benning, GA 31905-5007
706-545-2310
706-545-3841 FAX
E-Mail: bosset@benning-emh2.army.mil

Depth and Simultaneous Attack Battle Lab
COMDT, USAFAS
ATTN: ATSF-CBL
Fort Sill, OK 73503-5600
405-442-5647/6954/3706
405-442-5028 FAX
E-Mail: coffman@sill-battlelab.army.mil

Early Entry Lethality and Survivablity Battle Lab
CDR, USATRADOC
ATTN: ATCD-L
Fort Monroe, VA 23651-5000
757-727-2620/3584
757-727-5861 FAX
E-Mail: faked@emh9.monroe.army.mil

Mounted Maneuver Battlespace Lab
CDR, USAARMC
ATTN: ATZK-MW
Fort Knox, KY 40121-5000
502-624-7809
502-624-1932 FAX
E-Mail: krueger@ftknox-mbbl-lan.army.mil

Maneuver Support Battle Lab
CDR, USAES
ATTN: ATSE-BL
Fort Leonard Wood, MO 65473-6620
573-563-4082/7959
573-563-4089 FAX
E-Mail: arnolde@wood-vines.army.mil